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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,025	04/24/2001	Toshiro Hayakawa	Q64226	4254

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EXAMINER
JACKSON, CORNELIUS H

ART UNIT	PAPER NUMBER
2828	8

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/840,025	HAYAKAWA, TOSHIRO	
	Examiner	Art Unit	
	Cornelius H. Jackson	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) *13-23 and 33-43* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 24-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

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Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Claims 13-23 and 33-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 07.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12 and 24-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonoda (JP 10-254001) and Takano (US 5,790,578 A). Sonoda teaches a semiconductor laser module **Drawing 1** comprising a semiconductor laser element **10**

which emits laser light **11**; an optical wavelength selection element **14** which selects a first portion of said laser light having a predetermined wavelength in order to feed back said first portion of said laser light to said semiconductor laser element **10**; and an optical wavelength conversion element **15** which includes an optical waveguide **18**, receives a second portion of said laser light in said optical waveguide **18**, and converts said second portion of said laser light to wavelength-converted laser light **19** having a converted wavelength. Sonoda fails to teach that the type of semiconductor laser element. Takano teaches a semiconductor laser element **Fig. 8A** comprises a multiple-quantum-well active layer **35-37** including a plurality of quantum-well sublayers **35,37** each having a thickness and a composition, where one of the plurality of quantum-well sublayers **35** is different from another of the plurality of quantum-well sublayers **37** in at least one of the thickness and the composition. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the semiconductor laser element of Takano in the semiconductor laser module of Sonoda, since Sonoda teaches the use of any semiconductor laser element and Takano teaches a semiconductor laser element with advantages over conventional semiconductor laser element. Also it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 2, Sonoda discloses said optical wavelength selection element is a transparent-type optical wavelength selection element arranged between said semiconductor laser element and said optical wavelength conversion element, and

selects said first portion of said laser light after said laser light is reflected by an end facet of said optical wavelength conversion element, **see [0052], [0071] and [0092]**.

Regarding claim 3, Sonoda discloses an optical splitting unit **82** which splits a third portion of said laser light from said second portion of said laser light which is received by said optical wavelength conversion element **15**, and a reflection unit **85** which reflects said third portion of said laser light in order to feed back said third portion of said laser light to said semiconductor laser element **10**, and said optical wavelength selection element **14** is a transparent-type optical wavelength selection element arranged in an optical path of said third portion of said laser light between said reflection unit **85** and said semiconductor laser element **10**, **see Drawing 7**.

Regarding claim 4, Sonoda discloses said optical wavelength selection element is a thin-film narrow-band -pass filter formed on a surface of said reflection unit, **see [0095]**.

Regarding claim 5, Sonoda discloses a reflection unit which reflects a third portion of said laser light after said third portion of said laser light propagates through said optical wavelength conversion element, in order to feed back said third portion of said laser light to said semiconductor laser element, and said optical wavelength selection element is a transparent-type optical wavelength selection element arranged in an optical path of said third portion of said laser light between said reflection unit and said semiconductor laser element, **see Drawing 8**.

Regarding claim 6, Sonoda discloses said optical wavelength selection element is a thin-film narrow-band -pass filter formed on a surface of said reflection unit, **see [0095]**.

Regarding claim 7, Sonoda discloses an optical system which separates said wavelength-converted laser light from said third portion of said laser light, **see Drawing 9**.

Regarding claim 8, Sonoda discloses a reflection unit which reflects a third portion of said laser light which is emitted from said semiconductor laser element in a direction opposite to a direction toward said optical wavelength conversion element, in order to feed back said third portion of said laser light to said semiconductor laser element, and said optical wavelength selection element is a transparent-type optical wavelength selection element arranged in an optical path of said third portion of said laser light between said reflection unit and said semiconductor laser element, **see Drawing 9**.

Regarding claim 9, Sonoda discloses said optical wavelength selection element is a thin-film narrow- band-pass filter formed on a surface of said reflection unit, **see [0095]**.

Regarding claim 10, Sonoda discloses said optical wavelength selection element is a narrow-band-pass filter, **see [0052]**.

Regarding claim 11, Sonoda discloses said narrow -band-pass filter is realized by a thin-film band-pass filter, **see [0084]**.

Regarding claim 12, Sonoda discloses said thin-film band-pass filter is formed on a light-exit end facet of said semiconductor laser element from which said laser light is emitted, **see Drawing 11**.

Regarding claim 24, Sonoda discloses said semiconductor laser element is coupled to an end facet of said optical wavelength conversion element, **see Drawings 1, 7, 9 and 11**.

Regarding claim 25, Sonoda discloses said optical wavelength conversion element further comprises, a substrate made of a ferroelectric crystal exhibiting a nonlinear optical effect, where said optical waveguide is extends along a surface of said substrate, and a plurality of domain-inverted portions periodically formed along said optical waveguide, where a direction of spontaneous polarization is inverted in said plurality of domain-inverted portions, and said optical wavelength conversion element converts said second portion of said laser light to said wavelength converted laser light when said second portion of said laser light propagates in said optical waveguide, **see [0052]-[0055]**.

Regarding claim 26, Sonoda discloses said direction of said spontaneous polarization is inclined at an angle relative to said surface of said substrate, in a plane perpendicular to a direction in which said optical waveguide extends, where said angle is greater than 0 degrees and smaller than 90 degrees, **see abstract, [0019] and [0056]-[0058]**.

Regarding claims 27-29, Sonoda discloses all the stated limitations, **see the rejections to the combination corresponding of claims above**.

Regarding claims 30-32, Sonoda discloses a semiconductor laser module comprising: a semiconductor laser element which has a light-exit end facet, and emits laser light through said light-exit end facet; an optical wavelength conversion element which comprises an optical waveguide and an end facet, receives a first portion of said laser light having a predetermined wavelength in said optical waveguide, and converts said first portion of said laser light to wavelength-converted laser light having a converted wavelength, where said semiconductor laser element is coupled to said end facet of said optical wavelength conversion element through a reflection-type thin-film narrow-band-pass filter; and said reflection-type thin-film narrowband-pass filter which is sandwiched between said end facet of said optical wavelength conversion element and said light-exit end facet of said semiconductor laser element, and selectively reflects a second portion of said laser light having said predetermined wavelength in order to feed back said second portion of said laser light to said semiconductor laser element; said optical wavelength conversion element further comprises, a substrate made of a ferroelectric crystal exhibiting a nonlinear optical effect, where said optical waveguide is extends along a surface of said substrate, and a plurality of domain-inverted portions periodically formed along said optical waveguide, where a direction of spontaneous polarization is inverted in said plurality of domain-inverted portions, and said optical wavelength conversion element converts said first portion of said laser light to said wavelength converted laser light when said first portion of said laser light propagates in said optical waveguide; and said direction of said spontaneous polarization is inclined at an angle relative to said surface of said substrate, in a plane perpendicular to a direction

in which said optical waveguide extends, where said angle is greater than 0 degrees and smaller than 90 degrees, **see Drawing 13, [claim 19] and see the rejections to the combination corresponding of claims above**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (703) 306-5981. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

chj
May 3, 2003

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